

IN THE CLAIMS

Upon entry of the present amendment, the status of the claims will be as is shown below.

This listing of claims replaces all previous versions and listings of claims in this paper.

Claims 1-13 (Cancelled)

14. (Currently Amended) A bending apparatus ~~having a ram start-up device~~ for starting a ram ~~comprising at least one of an upper table to which a punch is attached and a lower table to which a die is attached, the bending apparatus bending with the punch and the die to bend~~ a workpiece abutted against abutments of a back gauge ~~so as to be positioned~~, the bending apparatus comprising:

a ram start-up device configured to be movable in a lateral direction; and

a controller configured to ~~stabilize positioning and processing operations of the workpiece by selecting~~ select edges of a workpiece to be abutted against the abutments, based on a shape of the workpiece ~~at each bending sequence~~ when the workpiece is to be bent, and configured to move the ram start-up device to a point in front of positioning points of the abutments corresponding to points of the selected edges,

wherein the ram comprises at least one of an upper table to which a punch is attached and a lower table to which a die is attached.

15. (Previously Presented) The bending apparatus according to claim 14,

wherein the point in front of positioning points of the abutments corresponding to points of the selected edges is an intermediate point in the lateral direction between positions of the abutments.

16. (Previously Presented) The bending apparatus according to claim 14,
wherein the ram start-up device comprises one of a foot switch and a two-hand operating device.

17. (Currently Amended) The bending apparatus of claim 16,
wherein the ram start-up device further comprises in which a transfer mechanism that
includes of the ram start-up device comprises a guiding mechanism and a driving mechanism,
wherein the guiding mechanism comprising comprises a guide disposed in the lateral direction and a roller rotatably disposed on a side of the ram start-up device and slidably attached to the guide, and

wherein the driving mechanism comprising comprises a driving pulley and an idler pulley disposed on both ends of the guide and a timing belt toroidally disposed around both the driving pulley and the idler pulley pulleys and fixed on the side of the ram start-up device.

18. (Currently Amended) A bending apparatus ~~having a ram start-up device~~ for starting a ram ~~comprising at least one of an upper table to which a punch is attached and a lower table to which a die is attached, the bending apparatus bending with the punch and the die to bend~~ a workpiece abutted against abutments of a back gauge ~~so as to be positioned~~, the bending apparatus comprising:

a ram start-up device configured to be movable in ~~the~~ a lateral direction;

a foreign object detector that detects entry of a foreign object into a region of movement of the ram start-up device; and

a controller that prevents the ram start-up device from moving when the entry of the foreign object is detected,

wherein the ram comprises at least one of an upper table to which a punch is attached and a lower table to which a die is attached.

19. (Previously Presented) The bending apparatus according to claim 18,
wherein the foreign object detector comprises a light emitter and a light receiving element, and when a ray of light from the light emitter is blocked, the entry of the foreign object is detected.

20. (Previously Presented) The bending apparatus according to claim 18,
wherein the ram start-up device comprises one of a foot switch and a two-hand operating device.

21. (Currently Amended) The bending apparatus of claim 20,
wherein the ram start-up device further comprises in which a transfer mechanism that
includes of the ram start-up device comprises a guiding mechanism and a driving mechanism,
wherein the guiding mechanism ~~comprising~~ comprises a guide disposed in the lateral direction and a roller rotatably disposed on a side of the ram start-up device and slidably attached to the guide, and

wherein the driving mechanism comprising comprises a driving pulley and an idler pulley disposed on both ends of the guide and a timing belt toroidally disposed around both the driving pulley and the idler pulley pulleys and fixed on the side of the ram start-up device.

22. (Currently Amended) A bending apparatus ~~having a ram start-up device~~ for starting a ram ~~comprising at least one of an upper table to which a punch is attached and a lower table to which a die is attached, the bending apparatus bending with the punch and the die to bend a~~

workpiece abutted against abutments of a back gauge so as to be positioned, the bending apparatus comprising:

~~the~~ a ram start-up device configured to be movable in ~~the~~ a lateral direction;

an input part that inputs product information;

a bending sequence determiner that determines a bending sequence in which of the workpiece is to be bent based on the product information;

a tool determiner that determines ~~the~~ at least one of a punch and the a die ~~bending used to bend the workpiece and a tool layout of the at least one of the punch and the die at each bending sequence~~ when the workpiece is to be bent;

an abutment point determiner that determines a point of an abutment in the lateral direction based on ~~the~~ a bending sequence in which the workpiece is to be bent, ~~the tool at least one of the punch and the die used to bend the workpiece, and the tool layout of the last least one of the punch and the die when the workpiece is to be bent~~; and

a ram start-up device point determiner that pre-determines a point of the ram start-up device in the lateral direction within a range of an abutting width procured from at least one abutment based on the determined point of the abutment in the lateral direction, and ~~that~~ when the ram start-up device actually moves to a point different from the pre-determined point, that determines the actual moving point as a final point of the ram start-up device,

wherein the ram comprises at least one of an upper table to which a punch is attached and a lower table to which a die is attached.

23. (Previously Presented) The bending apparatus according to claim 22,

wherein the ram start-up device point determiner determines a substantially intermediate point of an abutting width procured from at least one abutment as the point of the ram start-up device in the lateral direction.

24. (Previously Presented) The bending apparatus according to claim 23,
wherein the ram start-up device comprises one of a foot switch and a two-hand controller.

25. (Previously Presented) The bending apparatus according to claim 24,
wherein the final position of the ram start-up device is saved in a controller when an ON
signal is output from the ram start-up device.

26. (Previously Presented) The bending apparatus according to claim 22,
wherein the ram start-up device comprises one of a foot switch and a two-hand controller.

27. (Previously Presented) The bending apparatus according to claim 26,
wherein the final position of the ram start-up device is saved in a controller when an ON
signal is output from the ram start-up device.

28. (Previously Presented) The bending apparatus according to claim 22,
wherein the final position of the ram start-up device is saved in a controller when an ON
signal is output from the ram start-up device.

29. (Currently Amended) A bending apparatus ~~having a ram start-up device for starting~~
~~a ram comprising at least one of an upper table to which a punch is attached and a lower table to~~
~~which a die is attached, the bending apparatus bending with the punch and the die to bend a~~
workpiece abutted against abutments of a back gauge so as to be positioned, the bending
apparatus comprising:

~~the a~~ ram start-up device configured to be movable in ~~the a~~ lateral direction;

an abutment point determiner that determines a point of an abutment in the lateral direction based on a bending sequence in which the workpiece is to be bent, at least one of a punch and a die used to bend the workpiece, tool and a tool layout of the at least one of the punch and the die decided by a worker according to product information; and

a ram start-up device point determiner that determines a point where the ram start-up device is to be actually positioned ~~as a point of the ram start-up device~~ in the ~~right-left~~ lateral direction within a range of an abutting width procured from at least one abutment based on the point of the abutment in the ~~right-left~~ lateral direction,

wherein the ram comprises at least one of an upper table to which a punch is attached and a lower table to which a die is attached.

30. (Previously Presented) The bending apparatus of claim 29,

wherein the ram start-up device point determiner determines the actual positioning point as the point of the ram start-up device in the lateral direction, and then saves the determined point in a controller.